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Authors Compts

OBSERVATIONS

ON THE

FAILURE OF TURNEP CROPS,

&c. &c. &c.

BRITISH MUSEUM

OBSERVATIONS

ON THE

FAILURE OF TURNEP CROPS,

WITH

PROPOSALS FOR A REMEDY,

NOT ALTOGETHER NEW,

Yet not fully conſidered by agricultural Writers.

BY

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DULCE SATIS HUMOR,

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BRITISH MUSEUM

TO THE

PUBLIC.

THE great national importance of the ſubject, and a deſire of being ſerviceable to mankind, by cauſing " *two* turneps *to grow upon* " a ſpot of ground, where only *one* " grew before," muſt apologize for the following Obſervations. And as no premium is required from thoſe who chooſe to adopt the plan (which if unſucceſsful, is without additional expence) it is hoped that prejudices will be waved for the moment, and that the circumſtances which are brought forward in ſupport of an opinion, to be eſtabliſhed only by future practice, will meet a candid conſideration.

It is ſuppoſed there are twenty-two counties where turnep-crops are liable to failure; theſe counties contain 5638 pariſhes, and if the loſs ſuſtained in each is eſtimated only at £10. it amounts to the ſum of £56,380. but this eſtimate in unfavorable years, bears no proportion to the real injury; it is hoped therefore, as the remedy propoſed (though plain and ſimple) is neither expenſive or inconvenient, that a fair trial will be made by thoſe more immediately concerned in the cultivation of this truly valuable root; and as ſucceſs may be expected in various other crops, the communication of any remarks on the ſubject will be gladly received.

Hammersmith,
July 10*th*, 1800.

OBSERVATIONS,

OBSERVATIONS,

&c. &c. &c.

THE utility of the Turnep, as an article of huſbandry is too well known to render any comments neceſſary; and though the conſequences of a general failure can hardly be eſtimated, yet ſome idea may be formed of the extent of the evil, from the very high price of meat ſince the dry ſummer of 1794, which being unfavourable to the growth of turneps, and the ſevere winter following, great part of the remaining crop was deſtroyed, that was intended for winter and ſpring feeding, ſo that many farmers were compelled to fodder their ſtock with hay inſtead of turneps, and others to ſell it before it was full fed.

The failure of turnep crops has been generally conſidered to be owing to the ravages of a ſmall inſect of the beetle kind, called by the various names of the "Fly," "Flea," or "Black Dolphin"* that deſtroys the young plants by feeding on their ſeed leaves, as ſoon as they appear above ground; there are many other inſects which infeſt the turnep, but the "Fly" being conſidered as the principal

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[*] Cryſomela oleracea, of the genus coleoptera; the cryſomela nemorum (both ſkippers) alſo infeſts turneps, and in moſt places is equally injurious; the former is a dark greeniſh blue colour, approaching to black; the latter is black, with a ſtripe of yellow on each ſhell, and rather larger. Vide Linn. Syſt. Nat.

cipal enemy, many remedies have been propoſed to ſecure a crop, which have not in general proved effectual.

Before a remedy can with propriety be offered, it is neceſſary, if poſſible, to diſcover the cauſe of failure in turnep crops. The ſeaſon for ſowing the ſeed, and its progreſs towards perfection, ſhould be firſt conſidered. The ſowing ſeaſon is from the middle of June to the latter end of Auguſt, upon lands that are light and eaſily tilled; the great heat and drought which uſually prevail at that time of the year, the light and dry ſoil on which turneps are generally ſown, the very fine tilth commonly prepared for them, and laſtly, the ſowing of the ſeed ſuperficially, i. e. broad caſt, the ground being ſometimes previouſly harrowed, all theſe circumſtances ſeem to ſhew that the ſeed is not deſigned to vegetate until wet weather comes, at leaſt it ſeems unreaſonable to expect it.

" The turnep crop is precarious, prin-
" cipally becauſe the farmer is obliged
" to depart from the common ~~cauſe~~ course of
" nature, in accommodating it to his
" wants: inſtead of putting the ſeed
" into the ground in the ſpring months,
" when there would be as great a cer-
" tainty of a crop as of any other vege-
" table, he is obliged to defer ſowing
" until the hotteſt ſeaſon of the year
" comes on, when unleſs he is ſo fortu-
" nate as to have a few rainy days, or
" cloudy weather with frequent ſhowers,
" he can have little hopes of ſucceſs."*

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* Miller's Gardener's and Botaniſt's Dictionary, art. Braſica. New edition, by Profeſſor Martin.

The ſowing ſeaſon as above mentioned being uſually dry and hot,* the land brought to a fine tilth, the ſeed ſown on the ſurface, and harrowed in, there is ſcarcely ſufficient moiſture to make it ſprout, and unleſs the ſeed is placed at a proper depth to ſcreen it from the heat of the ſun, its vegetative powers will be deſtroyed. But a great part of the ſeed will generally imbibe ſufficient moiſture from the dews and dampneſs of the ſurrounding earth, during night, to make it vegetate; even then its progreſs will be checked by the heat of the ſucceeding day, and by being alternately moiſtened and dried, its vital principles will be much weakened, if not wholly deſtroyed.

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* If it be otherwiſe the crop is in no danger, and it is only under ſuch circumſtances, that the following obſervations are meant to apply; though in all caſes an eſtimate may be formed of their utility.—Theſe obſervations may alſo be extended to the ſowing of all kinds of ſeed,whatever, eſpecially oats, barley, clover, lucerne, graſs ſeeds, &c. &c.

If, as is ſometimes the caſe, the ſeed finds moiſture ſufficient to enable it to produce both its radicle and germ, and even to raiſe its ſeed-leaves above the ſurface of the ground, ſtill the ſame deſtructive effects may be ultimately produced; the heat will then exert its influence on the external parts of the plant,[*] by evaporating its moiſture faſter than it is ſupplied by the radicle, by which it either withers away, or is ſo much injured, that it never completely recovers itſelf; and there is no doubt, but that many acres of turneps are thus annually ſpoiled.[†]

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[*] *i. e.* the ſeed leaves, no others being then produced.

[†] July the 11th, 1797, near Wincheſter, ſome teams were ploughing-up a riſing ground, in order to be re-ſown with

The firſt proceſs towards vegetation is the ſwelling of the ſeed, by having imbibed a certain quantity of moiſture; it is then able to exert its vital powers, and in order to ſecure its future increaſe, when the demand for nouriſhment will be in proportion to its growth, it ſends forth its radicle or little root, which as it lengthens begins to branch out, being covered with very fine hairs reſembling down.

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with turneps; yet a full crop, (about two acres) was obſerved at the bottom of the hill. The plants were ſufficiently advanced for hoeing, and both kinds of fly were in great plenty, feeding on the rough leaves, which ſhewed marks of their ravages. In this caſe, the lower part of the field had many advantages in favour of the young plants, ſuch as leſs expoſure to heat and drought, a more fertile ſoil, and was [illegible] probably more moiſt than the upland part, at the time of ſowing; as ſuch, the plants could advance more rapidly in their growth, by being enabled to withſtand both the heat and drought, as well as the punctures of the fly.

down*. When the radicle has proceeded about half an inch, it ſends forth its germ, conſiſting of the ſtem and ſeed-leaves, with the bud of the future plant in embryo. Theſe ſeed-leaves are ſuppoſed to contain proper nouriſhment for the plant during the firſt ſtage of its growth; the radicle being then too ſmall and weak to furniſh food ſufficiently delicate. Every injury therefore done to theſe leaves, either from being punctured by inſects, or deprived of a ſupply of moiſture, muſt aſſiſt in checking the growth of the plant; and if it appears that one of theſe effects may be prevented by particular management, a conſiderable part of the evil will be removed.

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* By ſowing a ſingle ſeed cloſe to the inſide of a glaſs veſſel, filled with moiſt earth, the growth of a plant may be eaſily obſerved.

That turnep crops are materially injured by inſects is not to be denied, but that they are wholly deſtroyed by them, is certainly yielding to an opinion without conſidering whether there are not other cauſes operating at the ſame time, and with more effect. The following circumſtances ſeem to corroborate this idea. In Auguſt, 1792*, converſing with a gentleman who ſowed many acres of turneps upon a ſandy ſoil, and who was occaſionally with the reſt of his neighbours, a ſufferer from the ſuppoſed enemy, "the Fly," upon its being doubted that the entire deſtruction of a crop was owing to that inſect, he replied, by way of proof, that about eight o'clock one morning, he had

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* The dates are preſerved, as they were extracted from the author's common-place book.

particularly obſerved his turneps juſt appearing above ground, and with every proſpect of a full crop; that on examining his field about three o'clock in the afternoon of the ſame day, there was not a plant left, the Fly had deſtroyed them all!!! It was ſuggeſted, that they might have ſuffered from the heat of the ſun, but there was no chance of overcoming his prejudice; the idea was however cheriſhed, and every opportunity taken to examine the circumſtances which operated for or againſt it.

On the ſuppoſition that the cauſe of failure was principally owing to the hot and dry weather, ſome turneps (in the year 1793) were ſown in ſhallow drills, drawn by a hoe, on a light poor ſoil, and notwithſtanding the Fly was accuſed of having deſtroyed many crops in the adjoining grounds, yet the ſeed came up and produced a good crop. In 1794, the ſame experiment was repeated with ſimilar ſucceſs, although the Fly was more general that year than the former.

In order to aſcertain whether any advantage would be derived by ſowing the ſeed deeper, under an idea that the germ would require more time to force its way to the ſurface, and the radicle would at the ſame time be increaſing its powers downwards, and conſequently more capable of withſtanding the ſun's heat, thirty-two turnep ſeeds were ſown at different depths, in glaſs veſſels, filled with common garden mould, and plunged into the earth; on the fourth day after ſowing, they were examined, and the reſults were as follows:

ſeed ſown

at 4 in. depth,	had ſhot forth a radicle,	3 in. long,	a germ 1 in.
3 ditto	ditto	2½ ditto	ditto ⅞
2 ditto	ditto	2 ditto	ditto ¾
1 ditto	ditto	1½ ditto	ditto ½

on an average.

In the ſummer of 1794, the heat of the ſun was ſo great, that ſome white currants againſt a weſt wall appeared as if they had been ſcalded; the ſame circumſtance happened to both currants and gooſeberries growing as eſpaliers in a garden in the neighbourhood. In Auguſt, 1796, the tops of ſeveral climbing kidney beans *(Phaſeolus vulgaris)* and alſo the tops of golden rod *(Solidago virgaurea)* were ſcorched.*

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* Theſe circumſtances are mentioned to ſhew the power of the ſun upon plants not merely ſeedlings.

September 10th, 1796, looking into "Ellis's Chiltern and Vale Farming explained," to ſee what was ſaid to occaſion the failure of turnep crops, after mentioning the depredations of the Slug, the Fly, and the Caterpillar, he concludes, "and ſometimes the ſcorching heat of "the ſun."

In the new edition of Miller's Gardeners' and Botaniſts' Dictionary, under the article "*Braſſica*," are the following obſervations, extracted chiefly from agricultural writers of the preſent day.—"The deſtruction however which is imputed to the Fly, or to ſpeak more "properly the Turnep-beetle, ſometimes "ſeems to originate in the ſeaſon. When "the ſoil is fully and permanently moiſtened by a ſteeping rain, the ſeed will "vegetate, the plants will puſh into "rough leaf, and riſe without a check,

" though the beetle, and their other
" inſect enemies be in full force; but if
" the turneps have only ſhowers to de-
" pend upon in hot and dry weather,
" the ſeed will vegetate; but by the
" time the ſeed-leaves are formed, the
" moiſture will be wholly drawn off by
" the intervening days of drought, and
" the plants, deprived of nouriſhment,
" paſs away, parched up as in an oven."
In ſpeaking of the cultivation of turneps, by drilling (which is recommended on various accounts) the editor ſays, " But
" the principal advantage ſeems to con-
" ſiſt in depoſiting the ſeed at a proper
" depth in the ſoil, namely, about two
" inches, where there is moiſture even in
" a dry ſeaſon, to ſend the plants up in
" a few days; whereas, when they are
" ſown broad caſt, in a time of drought,
" the ſeed may remain ſeveral weeks
" waiting for rain to make them vege-

" tate; and the ſeed being all depoſited " at the ſame depth, will vegetate at " the ſame time; and by getting into " rough leaf ſooner, will ſtand a better " chance of eſcaping the Fly." The fact is, when the plants are ſo far advanced, they are able to overcome many obſtacles which occaſionally impede their growth, for the Fly unqueſtionably feeds upon the rough leaves, although it may prefer the ſeminal leaves, but the miſchief not being of ſuch conſequence, it has eſcaped obſervation. Both the black Turnep-beetle *(cryſomela oleracea)* and the ſtriped Turnep-beetle *(cryſomela nemorum*)* have this year, during the months of May and June, been ſeen eating the rough leaves of the cabbage tribe, ſuch as ſavoys, borecole, caile, and brocoli, as well as turneps; therefore the plants, when in rough leaf, are only ſafe, by being better able to bear theſe ravages, than during their infant ſtate.

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* As there is no appropriate name in the Engliſh language for theſe inſects, it might be proper to diſtinguiſh the two ſpecies by the names of ***black turnep-beetle*** and ***ſtriped turnep-beetle***; black and ſtriped braſſic beetle would perhaps

Thoſe remedies which have been recommended to the public with any pretenſions to ſucceſs, ſeem to depend on one principle, namely, the procuring ſuch a portion of fit nouriſhment for the young plants, that their vegetation may not be checked. Mr. Kirwan's Eſſay on Manures, throws much light on this ſubject, as well as many others, by proving, that

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perhaps be better, as comprehending the principal genus of plants on which they feed; but as the turnep ſeems to be of greater conſequence than the reſt of the ſpecies, the former name may be adopted.

that the food of plants conſiſts ſolely of decayed animal or vegetable matter, and many of thoſe ſubſtances directed to be uſed to prevent the Fly, ſerve either to render this carbonaceous matter fit to nouriſh the plants, or to afford that nouriſhment in themſelves. A certain quantity of water is alſo requiſite to be mixed with the food of plants before they can receive any benefit from it, therefore, whatever promotes either of theſe purpoſes, will accelerate the growth of the plants. For inſtance, "rolling the ground at midnight,"* prevents the evaporation in a certain degree, and probably retards the germs of the plants from coming ſo ſoon to the ſurface, by which their roots have more time to extend themſelves. "Sowing vegetable

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[*] Mr. Vagg's Method.

" aſhes" from their power of becoming moiſt, and alſo containing the carbonaceous matter, operates in a double way. " So alſo ſteeping the ſeed in train or " other oils,"✗ " ſowing ſoot or other " manures,"✗ is uſeful, by ſupplying additional food. But the greateſt deſideratum ſeems to be a due ſupply of moiſture, by which the plants can receive the food previouſly prepared in the ground, for if they have food and moiſture alſo to take up that food, they will ſoon be enabled to ſhoot forth ſuch a length of root, as is requiſite to furniſh nutriment ſufficient for their ſupply,

not-

✗ Semina vidi equidem multos medicare ſerentes
Et nitro prius et nigrâ perfundere amurcâ;
Grandior ut fœtus ſiliquis fallacibus eſſet.

Virg. Geor. lib. 1. 193.

✗ Mr. Winter's method.

me steep their seed in natron for a while
en mix it with black lees of olive oil;
t'stead of flatt'ring husks, the teeming groun
h a much larger produce may be crown'd.'

a

notwithſtanding the demands made upon them by inſects and heat.

Our Saviour's parable of the ſower, although particularly deſigned to repreſent the manner in which the goſpel was then and would afterwards be received, yet may ſerve to illuſtrate the propriety of ſowing ſeed in ſuch a manner, that it ſhould not die for lack of moiſture.—*Math.* 13 chap. 5 and 6 ver. *Some* (ſeeds) *fell upon ſtony places where they had not much earth; and forthwith they ſprang up, becauſe they had no deepneſs of earth; and when the ſun was up, they were ſcorched, and becauſe they had not root, they withered away.*——*Mark*, 4th chap. 5 and 6 ver. *And ſome fell on ſtony ground, where it had not much earth, and immediately it ſprang up, becauſe it had no depth of earth; but when the ſun was up, it was ſcorched, and becauſe it had no root, it* *it withered away*——*Luke*, chap. 8th, 6th ver. *Aud ſome fell on a rock, and as ſoon as it ſprung up, it withered away, becauſe it lacked moiſture.*

To a thinking mind, it might be preſumed theſe paſſages were ſo ſtrongly marked, that it would have been impoſſible for ſuch an error (namely, the total deſtruction of turneps by the Fly) to have been ſo univerſally adopted.

The ſtate of the ſeed ſoon after ſowing, and the circumſtances attending its progreſs into rough leaf, having been conſidered, and ſome preſumptive proofs offered, for ſuppoſing that the failure of turnep crops is owing to heat and drought rather than inſects, a remedy ſeems to point out itſelf, namely, placing the ſeed at ſuch a depth, that its radicle may have powers to ſupply the young plant with moiſture ſufficient to forward its growth, notwithſtanding the ravages of the inſects, and the heat of the weather. By the experiment of ſowing the ſeeds at different depths, as above-mentioned, it appears, that thoſe ſeeds ſown at a depth of four inches, had the ſtrongeſt radicle, and if they had been ſown in that manner on a large ſcale, it is preſumed they would have ſtood the heat, and produced a crop; if that depth ſhould be thought too great, from three to two inches may be adopted; but as it appears, that the ſeed will riſe when ſown at a depth of four inches, the mean between four and two may be obſerved, viz. three inches, by which there will be little chance of any of the ſeed getting below four, or above two inches.*

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* Many experiments ſince writing the above have been made, both in the field and in gardens, and were always crowned

How this is to be effected, every farmer will judge for himſelf.

It may be proper either to uſe a drill-plough, or to ſow the ſeed broad caſt, and having previouſly ploughed the ground in very wide furrows, to throw it up in ridges, that the ſeed falling between them, may, when harrowed, lie at a depth of about three inches, at the ſame time, ploughing only ſo much of the land early in the morning, as can be ſown, harrowed and rolled by ſix o'clock; and about ſix o'clock in the evening again, to plough as much as can be ſown, harrowed and rolled before dark,

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crowned with ſucceſs; but in thoſe which were made in the open field, the weather being ſhowery after ſowing, their proofs were not conſidered as ſatisfactory, and being on a large ſcale they were not ſo eaſily repeated, nor ſo correct, as ſome which were made in gardens.

dark, as recommended in Miller's Gardeners' and Botaniſts' Dictionary. Or the ſeed may be ſown under furrow.—But perhaps in a few years, the drill huſbandry will generally prevail; and the method adopted for turneps in Scotland, though not deſigned to ſave them from the Fly, but from wet and froſt, ſeems calculated to anſwer a very good purpoſe in England.

The land is divided into ridges three feet wide, the manure is ſpread in the furrows, then harrowed, and the turneps ſown from a revolving cylinder, pierced with holes at regular diſtances, to drop the ſeeds along the furrow, upon the manure, which is ſlightly covered with earth from the harrowing, the land is then ploughed ſhallow back again, throwing the two firſt furrows into that in which the manure was placed, thereby covering the ſeed. The ground is afterwards twice lightly ploughed to kill the weeds, and the laſt ploughing earths up the plants, and protects them from the froſt, the furrow between every row keeping them dry. The crops thus managed, were obſerved to be very luxuriant and regular.

From theſe obſervations, ſome judgment may be formed reſpecting their utility, and ſhould the plan finally be approved of and adopted, immenſe advantages will accrue to this country, by the *certainty* of a crop at a *given expence*.

BRITISH MUSEUM

THE END.

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